MR Form 3
(Revised 1984)

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JAN 20 1987

DIVISION OF
OIL, GAS & MINING

ANNUAL OPERATIONS AND PROGRESS REPORT

From Month/Year 1/1/86
to Month/Year 12/31/86

(To be submitted for each mining operation at the end of each calendar year to the Division at this address:)

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
(801) 538-5340

OPERATOR: Marblehead Lime Company MINE NAME: Utah Marblehead Lime

ADDRESS: P.O. Box 596, Grantsville, Utah 84029

PERMIT NUMBER AND DATE OF PERMIT: ACT/045/003 - 9/27/83

REPRESENTATIVE: Ernest E. Burgh, Utah Marblehead Lime, 390 E. Joe Orr Rd., Chicago Heights, IL 60411.

SECTION(S): 22, 26, 27, 35 TOWNSHIP(S): 2-N RANGE(S): 9-W
1, 2 1-N 9-W

MINERAL(S) MINED: Limestone

STATE AND/OR FEDERAL MINERAL LEASE NUMBERS: N/A

SPECIAL USE PERMITS AND/OR RIGHTS-OF-WAY: N/A

Section 40-8-15 and Rule M-8 of the Utah Mined Land Reclamation Act, requires each operator to include with this report an up-dated map and plan prepared in accordance with Rule M-3, as outlined in the requirements for annual report maps in Appendix I, providing a detailed status of all mining and reclamation activities which have occurred during the past year.

The report should include:

MINING:

(a) Tabulation of acreage disturbed (by pits, roads, facilities, etc.) during the report period with illustration on a current map.

Disturbance	Acreage
Pit	None
Roads	None
Facilities	None
Waste Dumps	None
Other	None

(b) Tabulation of acreage affected to date (by years).

Date by Year	Acreage (Total
1975	
1976	
1977	
1978	
1979	
1980	
1981	
1982	
1986	159 - Includes plant site, quarry and all roads.

(c) Tabulation of all topsoil (new) stockpile volumes (see chart below) and date of stockpiling.

SOIL TABULATION CHART

Area Affected (in mining sequence) (If more space is needed, please attach.)	Area 1	2	3	etc.
Acreage of Area				
Depth of Topsoil Removal (inches)				
Depth of Topsoil Replacement (inches)*				
Estimate of Topsoil Volume Salvaged (yd^3 or ac ft)				
Volume Actually Salvaged (yd^3 or ac ft)				
Volume Required for Reclamation (yd^3 or ac ft)				
Surplus or Deficit Volume (yd^3 or ac ft)				
Storage Status (short- or long-term)				

Soil Tabulation Chart (continued)

Area Affected (in mining sequence)	Area 1	2	3	etc.
Storage Location				
Area Where Soil Has Been Used (if not stored)				
Running Total (all stockpiles) (yd^3 or ac ft)				
Short-term				
Long-term				

*Of previously stripped area recently reclaimed.

(d) Tabulation of all (newly removed) out-of-pit spoil volumes, date of placement and illustration on a map.

Area	Date	Acreage

(e) Tabulation of quantity of commodity mined.

	Commodity	Tonnage
(Mined)	Dolomitic Limestone	0
(Milled)	High Calcium Quicklime - Received from Wendover, Nevada	46,000

(f) Description of any new construction during the report period with illustration on a map, including, but not limited to:

1. Buildings and support facilities.
None

2. Roads.

3. Diversion ditches, collector ditches, interceptor ditches, etc.

4. Culverts.

5. Sediment ponds, containment ponds.

6. Monitoring sites (vegetative, air quality, surface subsidence, surface water or ground water, etc.).

7. Topsoil stockpiles.

(g) Description of any environmental problem areas with a proposed plan for mitigation and illustration on a map, including, but not limited to:

1. Pit stability problems.

None

2. Subsidence.

3. Accidental water discharge, dam failure, etc.

4. Slumping, sliding or erosion.

5. Revegetation problem areas.

6. Existence and location of unsuitable (toxic) overburden.

RECLAMATION:

(a) Tabulation of the acreage reclaimed during the report period with illustration on a map, distinguishing between:

1. Backfilled, graded and contoured areas.

Area	Acreage
None	

2. Topsoiled areas.

Area	Acreage

3. Seeded areas.

Area	Acreage
None	

4. Reseeded areas (areas previously seeded, then seeded again).

Area	Acreage
None	

(b) Tabulation of total acreage reclaimed (seeded with permanent seed mix) to date by years with illustration on an updated map:

Year	Acreage
1975	
1976	
1977	
1978	
1979	
1980	
1981	
1982	
1983	
1984	
1985	1/4 acre - Test Plots

(c) Description of the reclamation procedures used during the report period, including: None

1. Average depth of topsoil applied.

2. Type of seed (species) used for seeding during the report period.

3. Date of seeding during the report period.

Spring None

Fall

4. Seeding procedures used. None

(Hand broadcast or drilled or any other).

5. Rate of seed application. None

Pounds Per Acre of Pure Live Seed (PLS) (if varied, please explain)

6. Type and rate of fertilizer applied. None

7. Type and rate of mulch applied. None

8. Rate of irrigation water applied, if any. Please describe any type of sprinkling, or water applied (water truck, etc.).
None

9. Revegetation test plot information.

(Cover, density, productivity, etc.)
See Attachment "A" for results of the first year monitoring of the test plots at Delle, Utah.

10. Soil analysis results.

(d) Description of results of previous revegetation efforts, including: (This should be done as applicable.)

1. Types (species) of seed that have germinated and are growing.
Attachment "A"

2. Types (species) of seed that are not growing successfully.
Attachment "A"

3. Areas experiencing problems with weeds and weed types.
Attachment "A"

4. Significant erosional problems.
Attachment "A"

5. Areas of unsuitable overburden on the surface as related to revegetation failure.
Attachment "A"

6. Procedures used or proposed to correct these problems.

7. Acreage and dates of release (upon inspection by the State) of revegetated areas.

Area	Date	Acreage

8. Results of soil analysis.

(e) Summarization of the reclamation costs incurred during the report period, including itemized costs for each operation (i.e., grading, topsoil replacement, seeding, etc.) and for each type of disturbance (i.e., spoil, haul roads, facilities removal, etc.) on a per acre basis.

	Acres	Cost/Acre
1. Grading		
2. Backfilling		
3. Contouring		
4. Topsoil Replacement		
5. Seeding		
A. Seedbed Preparation		
B. Mulch		
C. Fertilizer		
D. Seed		
6. Other - Monitoring		$200.00

BOND INFORMATION:

A. An updated bond estimate should be included, if required in the Division's approval of the Mining and Reclamation Plan (MRP) or if changes to the MRP have occurred, including a detailed itemization of actual/estimated reclamation costs as outlined in the RECLAMATION section above. The date of the release of revegetated areas from further responsibility for a partial bond release, if applicable, should also be included.

	Amount	Type	Date Posted
Present Bond	$119,257.00	Surety	September,'83

Increased disturbance, if any:

Increased Bond Amount (attached reclamation estimate).

B. Bond release.

Acres	Bond Amount Released	Date

ADDITIONAL INFORMATION:

Supply any additional information as requested by the Division related to:

(a) Permit stipulations (status).
(b) Other special conditions (status).

APPENDIX I

ANNUAL REPORT MAPS

1. Maps must be clear and legible contour maps or recent aerial photos. The scale should be 1 inch = 500 feet to adequately show topographic features.

2. Map sheets should be of a reasonable size, not to exceed 48 inches on a side.

3. Maps must have a title block with:

   A. Map title.
   B. Name and address of permittee.
   C. Permit and amendment numbers.
   D. Annual report period.
   E. Scale, north arrow, contour interval, date of photography, etc.

4. All maps must show:

   A. Legal subdivisions.
   B. Permit area boundary clearly shown and labelled.
   C. Amendment areas clearly shown and labelled.
   D. Contour features.

5. The following features should all be clearly identified:

   A. Topsoil stockpiles (numbered and with volumes).
   B. Settling ponds and sediment control structures.
   C. Haul roads.
   D. Pits identified by location, name, number, etc.
   E. Ramps (numbered).
   F. Out-of-pit spoil dumps.
   G. All waste disposal sites including, but not limited to:
      1. Landfill sites.
      2. Carbonaceous waste dumps.
   H. Diversion ditches.
   I. Monitoring sites.

6. All areas to be affected by mining and reclamation in the coming year should be outlined and labelled.

E I S

ENVIRONMENTAL INDUSTRIAL SUPPLY

P.O. Box 358 - Elmo, Utah 84521 - Telephone (801) 653-2606

Mel Coonrod - Reclamation Scientist
Hydro Seeding & Planting - Field Consultants
Complete Reclamation Supplies

October 1, 1986

Mr. Phillip N. Raines
Marblehead Lime Company
390 East Joe Orr Road
Chicago Heights, Illinois 60411

RE: Vegetation Test Plots
Marblehead Lime, Delle, Utah

Dear Phillip:

Please find attached, the results from our first year monitoring of the test plots at Delle, Utah. I have also outlined a brief scenario of the methodology utilized in establishing the plots.

It's important to note that the results by themselves are not necessarily indicative as to what the end results may be. A number of individual seedlings that were counted in each plot appeared to have died; also, there is really no way to determine vigor on a scientific basis, but there was a wide range of vigor of individual plants within each of the plots.

I am confident that next year's results will be much more conclusive.

I appreciate the opportunity to have worked with you on this and look forward to working with you in the future.

Sincerely,

Melvin A. Coonrod

MC/njc

cc: Jack Minchey

ATTACHMENT "A"

Vegetative Test Plots
Marblehead Lime Company

Methodology:

In October of 1985, B & R Reclamation, utilizing a crew of 4 men, and 1 Bowie 2500 hydroseeder, implemented the following:

An area of 20 X 50 meters was fenced utilizing 6' metal posts on 10' center with 2 strands of barbed wire. The intent of the fence was to preclude domestic grazing and incidental tresspass by heavy equipment which work in the adjacent areas.

Within this enclosure, 5 individual test plots were delineated on the ground with wooden stakes at each corner, and a descriptive stake in the center of each plot identifying the individual treatment. Each plot was 8 x 13 meters (app. 100 sq. meters). In addition, at the southern end of the enclosure, 8 strips 1 meter x 5 meters were laid out to plant each of the eight species utilized in the seed mix. (See figure 1).

The area to be utilized for the test had approximately 1' of top dressing of mine by-products (tailings). During the preparation of the plots, approximately 4" of snow covered the site and required the use of a grader to clear snow prior to seeding, fertilization and mulching.

Two different fertilizer treatments were recommended for comparison;

the BLM's recommended mix at a rate of 10-20-10 pounds per acre, and a UDOGM recommended mix at 40-0-30 pounds per acre. NH_4SO_4 was used to help mitigate the high sodium content of the soil. It was necessary to substitute 16-16-8 fertilizer in place of the BLM's recommendation of 10-20-10 fertilizer based on availability. Wood fiber mulch was utilized at 2,000# per acre and was applied in a uniform layer utilizing the hydroseeder. Seed and fertilizer were weighed so that it was applied at a rate of 14# of seed per acre and 100# of available fertilizer per acre. The application was by Cyclone Hand Seeders.

The northern most plot 1 was utilized as a control, seed was raked in to lightly cover, but received no fertilizer or mulch. Plot 2 received raked seed and 40-0-30 fertilizer. Plot 3 raked seed, 40-0-30 fertilizer and 2000# wood fiber mulch. Plot 4 received raked seed, 16-16-8 fertilizer and 2000# wood fiber mulch. Plot 5 received raked seed and 16-16-8 fertilizer.

The following seed mix was utilized:

Species	lbs. Pure Live Seed/Acre
Bluebunch Wheatgrass	2
Thickspike Wheatgrass	2
Galleta Grass	2
Indian Ricegrass	2
Gooseberryleaf Globemallow	1
Yellow Sweetclover	1
Winterfat	2
Four-wing Saltbush	2
	14 Total

In addition to the 5 plots, each of the above listed species were seeded in a designated area.

On August 25th, 1986, a followup study was conducted on the test plots. A 1 sq. meter frame was used and randomly placed at three locations within each plot. The following information was obtained:

1. Species composition
2. Number of individual seedlings
3. Estimates of total vegetative cover (Excluding weed species)

In addition, some judgements were made as to vigor, and any factors which may be causitive to ultimate survivability. The results of that investigation are included in Figure 1.

Galleta Grass
.1% (GG)

Indian Rice Grass
1% (IR)

Yellow Sweet Clover
4% (SC)

Gooseberryleaf Globemallow
0% (GM)

Winterfat
1% (WF)

Bluebunch Wheatgrass
60% (BW)

Four-wing Saltbush
1% (4-W)

Thickspike Wheatgrass
60% (TW)

Thistle (T)
Ragweed (RW)
Unknown (UK)

P-1	
3	WF
4	RG
75	BW/TW
1	RW

P-2	
5	BW/TW
2	T
2	RW

P-3	
2	SC
2	WF
1	IR
23	BW/TW
4	RW

P-1	
45	SC
57	IR
87	BW/TW

P-2	
120	SC
1	WF
99	IR
242	BW/TW
6	GG
2	T
1	RW

P-3	
76	SC
24	IR
83	BW/TW
4	T

P-1	
95	SC
16	IR
58	BW/TW
1	RW
12	T

P-2	
15	SC
2	WF
69	IR
160	BW/TW
5	T

P-3	
31	IR
46	SC
2	WF
118	BW/TW
7	T

P-1	
3	SC
70	BW/TW
1	UK

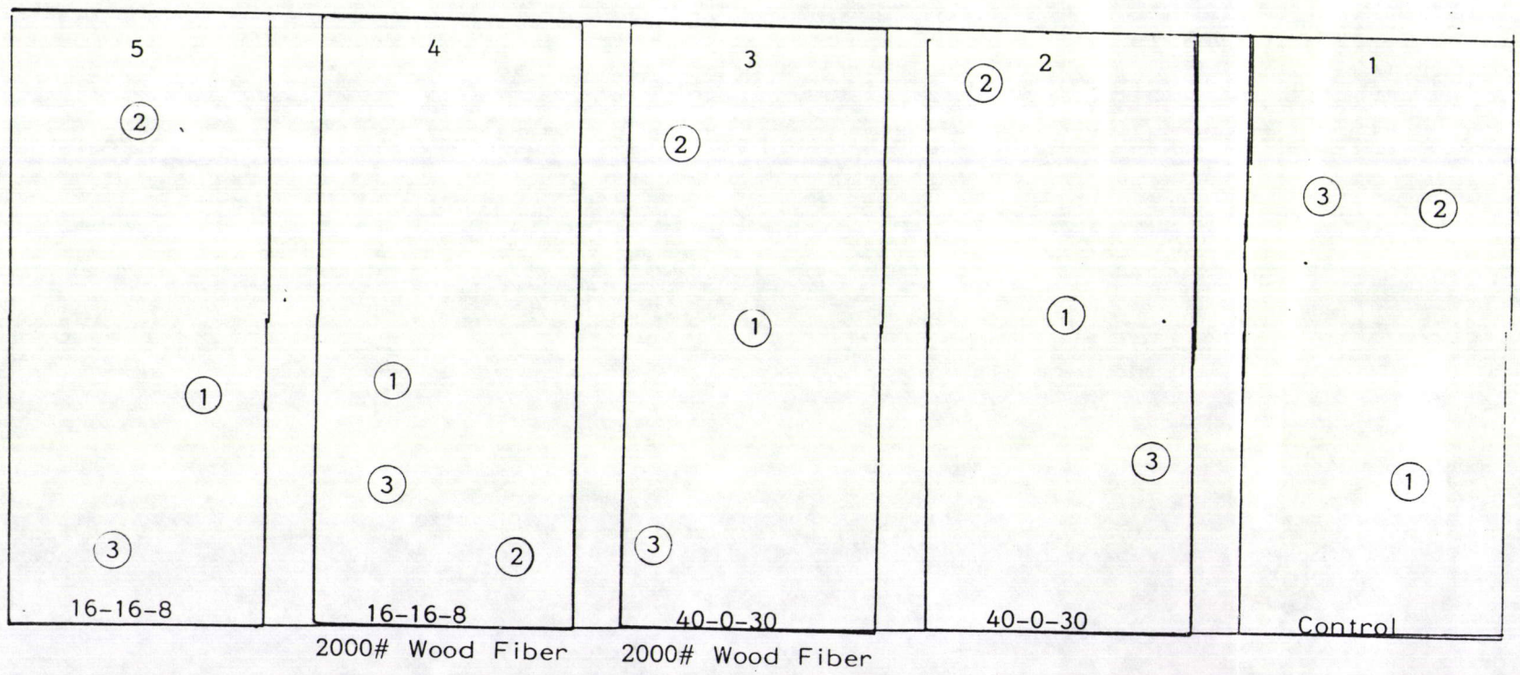
P-2	
3	SC
2	BW/TW
5	T

P-3	
1	SC
2	WF
24	BW/TW
2	T
3	RW

P-1	
1	4-W
75	RW
2	T
1	WF

P-2	
2	T
5	RW

P-3	
4	WF
8	SC
81	BW/TW
17	RW



Conclusion:

This preliminary appraisal of the plots would indicate that:

(1) Wood fiber mulch appears to greatly enhance establishment.

(2) The 16-16-8 fertilizer application appears to be superior over the 40-0-30 application.

(3) Based on the Strip Planting with no treatment, it appears that an increase in the seedling rate (#/acre) would improve overall success.

The following is a breakdown of % of vegetative cover on each plot by species:

Plot 1 Seed Only

196 Total plants (including weeds) 3% sample

Wheatgrasses	41%
Ragweed	49%
Sweetclover	4%
4-Wing	2%
Thistle	2%

Desired species comprise 47% vegetative cover

Vigor - poor <5% ground cover by vegetation.

Plot 2 40-0-30 Fertilizer only

116 Total plants (including weeds) 3% sample

Wheatgrasses	82%
Sweet Clover	6%
Thistle	6%
Ragweed	2%
Winter Fat	2%

Desired species comprise 90% vegetative cover

Vigor - poor (exception; Clover - vigor good) <5% ground cover by vegetation.

Plot 3 40-0-30 Fertilizer, 2000# Wood fiber mulch

637 Total plants (including weeds) 3% sample

Wheatgrasses	52%
Sweet Clover	24%
Indian Rice Grass	16%
Thistle	3%
Winter Fat	.6%

Desired species comprise 92.6% vegetative cover

Vigor - good (except wheatgrass - poor) 6% ground cover by vegetation

Plot 4 16-16-8 Fertilizer, 2000# Wood fiber mulch

847 Total plans (including weeds) 3% sample

Wheatgrasses	48%
Sweet Clover	28%
Indian Rice Grass	21%
Galleta Grass	.7%
Thistle	.7%
Winter Fat	<.1%
Rag Weed	<.1%

Desired species comprise 97.7% vegetative cover

Vigor - good 18% ground cover by vegetation

Plot 5 16-16-8 Fertilizer Only

124 Total Plans (including weeds) 3% sample

Wheatgrasses	83%
Ragweed	8%
Winter Fat	4%
Indian Rice Grass	1%
Thistle	1%
Sweet Clover	1%

Desired species comprises 89% vegetative cover

Vigor - poor <5% ground cover by vegetation.

File

Marblehead Lime Company
A General Dynamics Company

390 East Joe Orr Road
Chicago Heights, Illinois 60411
312/757-6201

RECEIVED
JAN 20 1987
DIVISION OF
OIL, GAS & MINING

January 13, 1987

Mr. Lowell P. Braxton, Administrator
Mineral Resource Development and
Reclamation Program
State of Utah
Department of Oil, Gas and Mining
355 W. North Temple
3 Triad Center - Suite 350
Salt Lake City, Utah 84180-1203

RE: 1986 Annual Report, Form MR-3, ACT/045/003,
Utah Marblehead Lime, Tooele County, Utah

Dear Mr. Braxton:

Attached please find our Form MR-3 Annual Operation and Progress Report. During this reporting period, no changes or improvements have been made in the already improved areas. Attachment "A" is a report on the first year monitoring of the test plots.

If you have any questions or if additional information is needed, please contact me or my Staff Assistant, Philip N. Raines, at the above address and phone number.

Respectfully,

MARBLEHEAD LIME COMPANY

Ernest E. Burgh
Vice President of Operations

EEB/bb
Attachments

cc: M.D. Henery
E.J. Penman
P.N. Raines
Jack Minchey - Utah Marblehead Lime
file